Exam

Name_____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Identify the specified numbers.

1) The integers in the following list:

$25, \sqrt{5}, -20, 0, \frac{4}{9}, -\frac{9}{4}, 1.8, \sqrt{25}$

A) $25, 0, \sqrt{25}$ B) $25, 0$ C) $25, -20, 0, \sqrt{25}$ D) $25, -20, 0$

Answer: C

2) The rational numbers in the following list:

$1, \sqrt{6}, -12, 0, \frac{0}{1}, \sqrt{9}, 0.78$

A) $1, -12, 0, \frac{0}{1}, \sqrt{9}$ B) $\frac{0}{1}$

C) $1, -12, 0, \frac{0}{1}$ D) $1, -12, 0, \frac{0}{1}, \sqrt{9}, 0.78$

Answer: D

3) The irrational numbers in the following list:

$4, \sqrt{8}, -14, 0, \frac{0}{7}, \sqrt{25}, 0.44$

A) $\sqrt{8}, \sqrt{25}$ B) $\sqrt{8}$ C) $\sqrt{8}, 0.44$ D) $\sqrt{8}, \sqrt{25}, 0.44$

Answer: B

4) The real numbers in the following list:

$7, \sqrt{7}, -13, 0, \frac{0}{1}, \sqrt{25}$

A) $7, \sqrt{7}, -13, 0, \frac{0}{1}, \sqrt{25}$ B) $7, -13, 0, \sqrt{25}$

C) $7, -13, 0, \frac{0}{1}$ D) $7, -13, 0, \frac{0}{1}, \sqrt{25}$

Answer: A

5) The real numbers in the following list:

$\sqrt{25}, -6, \sqrt{-6.3}, 6.3, -0.83, \sqrt{6.6}, \sqrt{-3}, \sqrt{-36}$

A) $-6, 6.3, -0.83$ B) $\sqrt{25}, -6, 6.3, -0.83, \sqrt{6.6}$

C) $\sqrt{25}, -6, 6.3, -0.83$ D) $\sqrt{25}, -6, \sqrt{-6.3}, 6.3, -0.83, \sqrt{6.6}, \sqrt{-3}, \sqrt{-36}$

Answer: B

6) The imaginary numbers in the following list:

$\sqrt{4}, 9, \sqrt{-6.8}, -6.8, -0.22, \sqrt{4.8}, \sqrt{-3}, \sqrt{-81}$

A) $\sqrt{4}, \sqrt{-6.8}, \sqrt{4.8}, \sqrt{-3}, \sqrt{-81}$ B) $\sqrt{-6.8}, \sqrt{4.8}, \sqrt{-3}$

C) $\sqrt{-6.8}, \sqrt{-3}, \sqrt{-81}$ D) $\sqrt{4}, 9, \sqrt{-6.8}, -6.8, -0.22, \sqrt{4.8}, \sqrt{-3}, \sqrt{-81}$

Answer: C

Find the absolute value.

7) $|-21|$

A) 0 B) 21 C) ± 21 D) -21

Answer: B

8) $|6|$

A) 6 B) ± 6 C) -6 D) 0

Answer: A

9) $|-11|$

A) 0 B) 11 C) ± 11 D) -11

Answer: B

10) $|-4|$

A) 0 B) ± 4 C) 4 D) -4

Answer: C

11) $|-21|$

A) 21 B) 0 C) -21 D) ± 21

Answer: A

12) $|0|$

A) -1 B) 1 C) 0 D) Not defined

Answer: C

13) $\left|\frac{7}{2}\right|$

A) 0 B) $\pm\frac{7}{2}$ C) $-\frac{7}{2}$ D) $\frac{7}{2}$

Answer: D

14) $|-7.19|$

A) -7.19 B) 0 C) 7.19 D) ± 7.19

Answer: C

15) $|-7.4|$

A) 7.4 B) 0 C) -7.4 D) ± 7.4

Answer: A

16) $\left|3\frac{1}{2}\right|$

A) 0 B) $\pm 3\frac{1}{2}$ C) $3\frac{1}{2}$ D) $-3\frac{1}{2}$

Answer: C

Insert the correct sign of inequality (> or <) between the given numbers.

17) $-8 \quad -1$

A) $-8 > -1$ B) $-8 < -1$

Answer: B

18) 4.2 -8.4

A) 4.2 < -8.4 B) 4.2 > -8.4

Answer: B

19) 1 $1\frac{1}{4}$

A) $1 < 1\frac{1}{4}$ B) $1 > 1\frac{1}{4}$

Answer: A

20) 93 -58

A) 93 > -58 B) 93 < -58

Answer: A

21) -27 -34

A) -27 > -34 B) -27 < -34

Answer: A

22) π 2

A) $\pi < 2$ B) $\pi > 2$

Answer: B

23) $\sqrt{10}$ 3.17

A) $\sqrt{10} > 3.17$ B) $\sqrt{10} < 3.17$

Answer: B

24) -19 $\sqrt{8}$

A) $-19 > \sqrt{8}$ B) $-19 < \sqrt{8}$

Answer: B

25) 7 $-\sqrt{10}$

A) $7 > -\sqrt{10}$ B) $7 < -\sqrt{10}$

Answer: A

Find the reciprocal of the number.

26) 7

A) $\frac{1}{7}$ B) 1 C) $-\frac{1}{7}$ D) -7

Answer: A

27) -8

A) $\frac{1}{8}$ B) 0 C) $-\frac{1}{8}$ D) 8

Answer: C

28) $\frac{5}{4}$

A) $-\frac{5}{4}$ B) $\frac{4}{5}$ C) 1 D) $-\frac{4}{5}$

Answer: B

29) $-\frac{5}{2}$

A) $\frac{2}{5}$ B) $-\frac{2}{5}$ C) 1 D) $\frac{5}{2}$

Answer: B

30) $\frac{3}{\pi}$

A) π B) $\frac{\pi}{3}$ C) $-\frac{3}{\pi}$ D) 3π

Answer: B

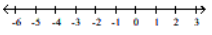
31) $\frac{g}{z}$

A) gz B) $\frac{z}{g}$ C) $-\frac{g}{z}$ D) $-\frac{z}{g}$

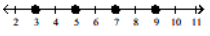
Answer: B

Locate each number on a number line.

32) -5, -3, -1, 1



A)



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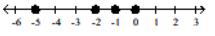

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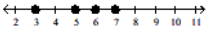
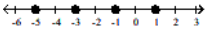
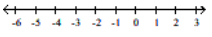


D)

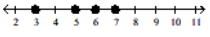


Answer: D

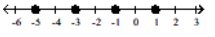
33) -5, -3, -1, 1



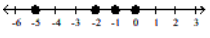
A)



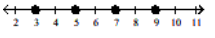
B)



C)



D)

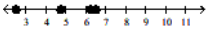


Answer: B

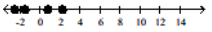
34) $-1.5, 0.75, 2.25, -2.5$

A)

B)



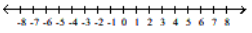
C)



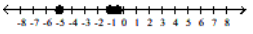
D)

Answer: C

35) $-\sqrt{5}, \frac{\sqrt{5}}{5}, \frac{\pi}{6}, -1.07$



A)



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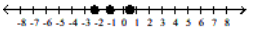
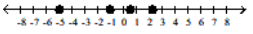


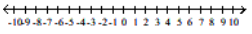
C)



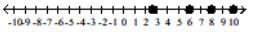
D)

Answer: B

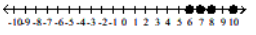
36) $6, \sqrt{7}, 10, 8$



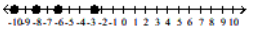
A)



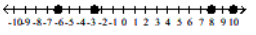
B)



C)

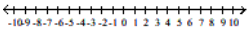


D)

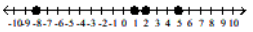


Answer: A

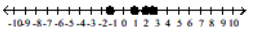
37) $-\frac{8}{3}, 1, \frac{5}{4}, 2$



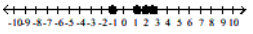
A)



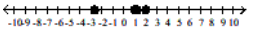
B)



C)



D)



Answer: D

Write the numbers in numerical order, smallest to largest.

38) 9, -11, 23, -20, 1

A) 1, 9, 11, 20, 23 B) 23, 9, 1, -11, -20 C) -20, -11, 1, 9, 23 D) -11, -20, 1, 9, 23

Answer: C

39) $|-7|, -|15|, -|1|$

A) $-|-1|, -|15|, |-7|$ B) $-|15|, -|1|, |-7|$ C) $|-7|, -|1|, -|15|$ D) $-|1|, |-7|, -|15|$

Answer: B

40) $\sqrt{4}, -4, 5, -\sqrt{5}, \frac{15}{14}$

A) $-4, -\sqrt{5}, \frac{15}{14}, \sqrt{4}, 5$ B) $5, \sqrt{4}, \frac{15}{14}, -\sqrt{5}, 4$ C) $\frac{15}{14}, \sqrt{4}, -4, -\sqrt{5}, 5$ D) $-\sqrt{5}, -4, \frac{15}{14}, \sqrt{4}, 5$

Answer: A

41) $\frac{3}{4}, -\frac{8}{5}, -\frac{7}{5}, \sqrt{1}, -2$

A) $-2, -\frac{8}{5}, -\frac{7}{5}, \frac{3}{4}, \sqrt{1}$ B) $\sqrt{1}, -2, \frac{3}{4}, -\frac{7}{5}, -\frac{8}{5}$

C) $-\frac{8}{5}, -\frac{7}{5}, -2, \sqrt{1}, \frac{3}{4}$ D) $-\frac{8}{5}, -\frac{7}{5}, -2, \frac{3}{4}, \sqrt{1}$

Answer: A

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

Answer the question.

42) True or False.
Every whole number is a real number.

Answer: ✓ True False

43) True or False.
Some rational numbers are irrational.

Answer: True ✓ False

44) True or False.
Some rational numbers are integers.
Answer: True False

45) True or False.
Every integer is an irrational number.
Answer: True False

46) True or False.
Some real numbers are integers.
Answer: True False

47) True or False.
The absolute value of any number is positive.
Answer: True False

48) True or False.
The absolute value of any nonzero number is an irrational number.
Answer: True False

49) True or False.
$-\sqrt{-7}$ is an imaginary number.
Answer: True False

50) True or False.
If number a is to the left of number b on a number line, then a > b.
Answer: True False

51) True or False.
A fraction cannot contain an imaginary number in the denominator.
Answer: True False

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Perform the indicated operation.

52) 3 + (-4)
A) 1 B) -1 C) -7 D) 7
Answer: B

53) -20 + 24
A) 4 B) -44 C) 44 D) -4
Answer: A

54) -23 + (-4)
A) 27 B) 19 C) -19 D) -27
Answer: D

55) 3 - 12
A) 9 B) -15 C) -9 D) 15
Answer: C

56) -2 - 13
A) -15 B) 11 C) 15 D) -11
Answer: A

57) -12 - (-7)
A) 19 B) -19 C) -5 D) 5
Answer: C

58) 11 - (-6)
A) 5 B) -17 C) -5 D) 17
Answer: D

Find the product.

59) (9)(24)
A) 216 B) 207 C) 116 D) 2160
Answer: A

60) (29)(-49)
A) 1421 B) -1521 C) -1450 D) -1421
Answer: D

61) (-46)(39)
A) -1794 B) -1894 C) -1833 D) -17,940
Answer: A

62) (-18)(-22)
A) 296 B) 3960 C) 414 D) 396
Answer: D

63) (9)(-5)(-5)
A) 235 B) 225 C) -90 D) -225
Answer: B

64) (-6)(-3)(5)
A) -90 B) 80 C) 190 D) 90
Answer: D

65) (-3)(-7)(-3)
A) -73 B) 63 C) -63 D) 37
Answer: C

66) (-9)(-9)
A) 91 B) -81 C) -91 D) 81
Answer: D

67) (-3)(-3)(-3)
A) 27 B) -37 C) -27 D) -17
Answer: C

68) (-46)(0)

A) 1 B) 0 C) 46 D) -46

Answer: B

Perform the indicated operation.

69) $\frac{-52}{4}$

A) $-\frac{1}{13}$ B) 13 C) -23 D) -13

Answer: D

70) $\frac{117}{-9}$

A) 13 B) -23 C) -13 D) $-\frac{1}{13}$

Answer: C

71) $\frac{-175}{-7}$

A) 15 B) -25 C) 25 D) $\frac{1}{25}$

Answer: C

72) $\frac{-140}{20}$

A) -7 B) 7 C) -17 D) $-\frac{1}{7}$

Answer: A

73) $\frac{300}{-60}$

A) 5 B) -15 C) -5 D) $-\frac{1}{5}$

Answer: C

74) $\frac{-70}{-35}$

A) -8 B) $\frac{1}{2}$ C) 2 D) -2

Answer: C

75) $\frac{-7}{0}$

A) 7 B) 1 C) 0 D) Undefined

Answer: D

76) $\frac{0}{-65}$

A) 1 B) Undefined C) 65 D) 0

Answer: D

77) $\frac{-216}{-9(4)}$

A) -6 B) 6 C) 24 D) -24

Answer: B

78) $\frac{4(-7)}{2(-8)}$

A) $\frac{1}{2}$ B) $\frac{7}{4}$ C) $-\frac{7}{4}$ D) $-\frac{1}{2}$

Answer: B

Find the value of the expression.

79) 17 + 16 × 25 - (-13)

A) 430 B) 838 C) 71 D) 812

Answer: A

80) 5 + (-4)(-22) + (-9)

A) 189 B) 84 C) 117 D) 22

Answer: B

81) 2(-27) + 25(-13)

A) 379 B) 67 C) -379 D) 1352

Answer: C

82) (-19 - 15)(-10 - 21)

A) 44 B) 1054 C) -1054 D) -44

Answer: B

83) (-6 - 5)[3 + (5 + 6)]

A) -44 B) 25 C) 21 D) -154

Answer: D

84) $\frac{7 \times (8 + 3) + 7 \times 5}{7 \times (7 - 1)}$

A) $2\frac{2}{3}$ B) $2\frac{1}{3}$ C) 2 D) $6\frac{7}{8}$

Answer: A

85) $\frac{5 \times (5 - 6) + 5 \times 2}{5 \times (7 - 1)}$

A) 2 B) $\frac{5}{34}$ C) $\frac{1}{6}$ D) $\frac{29}{34}$

Answer: C

86) $8[-4 + 2(-6 + 5)]$

A) -34 B) 16 C) -48 D) 12

Answer: C

87) $-|-2|-|-14-7|$

A) 19 B) -19 C) 23 D) -23

Answer: D

Determine which of the fundamental laws of algebra is demonstrated.

88) $(5 + 2) + 4 = (2 + 5) + 4$

A) Identity B) Associative C) Commutative D) Distributive

Answer: C

89) $2(x + 4) = 2x + 2 \times 4$

A) Commutative B) Distributive C) Associative

Answer: B

90) $5 + 1 = 1 + 5$

A) Associative B) Distributive C) Commutative

Answer: C

91) $(5 \times 9) \times 2 = 5 \times (9 \times 2)$

A) Commutative B) Associative C) Distributive

Answer: B

92) $6 \times 4 = 4 \times 6$

A) Distributive B) Associative C) Commutative

Answer: C

93) $(-6 + 2) - 1 = -6 + (2 - 1)$

A) Distributive B) Commutative C) Associative

Answer: C

Determine whether the first literal expression is equal to the second literal expression.

94) $a + b,\ b - (-a)$

A) Yes B) No

Answer: A

95) $a - b,\ b - a$

A) Yes B) No

Answer: B

96) $-a - b,\ -b + (-a)$

A) Yes B) No

Answer: A

97) $b - a,\ a - (-b)$

A) Yes B) No

Answer: B

Provide an appropriate response.

98) If an even number of negative numbers are multiplied, what will be the sign of the product?
A) Negative
B) Positive
C) Cannot be determined
D) It depends upon the numbers

Answer: B

99) What conditions must be placed on the values of x and y so the expression $|x - y|$ will be equal to the expression $|x| + |y|$?
A) y must always be positive.
B) x and y must have the same signs or at least one be zero.
C) y must always be negative.
D) x and y must have opposite signs or at least one be zero.

Answer: D

100) The gross profit percentage of a company is defined as $100\,\frac{\text{sales - cost of goods sold}}{\text{sales}}$. Is it correct to say that a company has 0% gross profit before it makes its first sale?
A) Yes
B) No

Answer: B

101) Two identical orders for goods are to be shipped. The first stock picker puts part 1 of the order on pallet A. He puts parts 2 and 3 of the order on pallet B and loads his truck. The second stock picker puts parts 1 and 2 on pallet A, and part 3 on pallet B before loading his truck. Which fundamental law of algebra shows that the trucks have identical orders?
A) Distributive law
B) Commutative law of addition
C) Commutative law of multiplication
D) Associative law of addition

Answer: D

102) 6 car dealers each sell 18 trucks and 27 cars. An expression to determine the total number of vehicles sold is 6 (18 trucks + 27 cars). Which fundamental law of algebra does this expression illustrate?
A) Distributive law
B) Associative law of multiplication
C) Commutative law of multiplication
D) Commutative law of addition

Answer: A

Determine whether the given number is approximate or exact.

103) The history class has 104 students.
A) Exact
B) Approximate

Answer: A

104) The blackboard in the mathematics classroom is 81 inches long.
A) Approximate
B) Exact

Answer: A

105) The cost of gasoline is $0.979 per gallon.
A) Exact
B) Approximate

Answer: A

106) Susan's new car gets 16 miles per gallon of gasoline.
A) Exact
B) Approximate

Answer: B

107) Jennifer has 32 teeth.
A) Approximate B) Exact
Answer: B

108) The ammeter showed a reading of 0.18A.
A) Approximate B) Exact
Answer: A

109) The thermometer showed that the temperature in the classroom was 66°F.
A) Approximate B) Exact
Answer: A

110) One mole of an element contains 6.022×10^{23} atoms.
A) Exact B) Approximate
Answer: B

111) The radius of the planet is 3435 km.
A) Approximate B) Exact
Answer: A

112) There are 5280 feet in a mile.
A) Approximate B) Exact
Answer: B

Determine the number of significant digits in the given approximate number.

113) 587,000,000
A) 9 B) 3 C) 5 D) 8
Answer: B

114) 0.0000467
A) 3 B) 10 C) 6 D) 4
Answer: A

115) 7080
A) 1 B) 4 C) 2 D) 3
Answer: D

116) 0.0403
A) 2 B) 3 C) 4 D) 1
Answer: B

117) 70,010
A) 4 B) 2 C) 3 D) 5
Answer: A

118) 0.05002
A) 5 B) 4 C) 6 D) 2
Answer: B

119) 9000.4
A) 3 B) 5 C) 2 D) 4
Answer: B

120) 0.070080
A) 5 B) 3 C) 2 D) 6
Answer: A

121) 800
A) 5 B) 1 C) 4 D) 2
Answer: B

122) 705.050
A) 6 B) 2 C) 3 D) 4
Answer: A

First determine which number (x or y) is more accurate, then which is more precise.

123) x = 36.5, y = 0.26
A) y, y B) y, x C) x, y D) x, x
Answer: C

124) x = 0.035, y = 9494
A) x, y B) y, x C) y, y D) x, x
Answer: B

125) x = 0.8, y = 20
A) y, x B) x, y C) y, y D) x, x
Answer: C

126) x = 8070, y = 0.004
A) x, y B) y, y C) y, x D) x, x
Answer: A

127) x = 9,000, y = 0.0090
A) y, y B) y, x C) x, y D) x, x
Answer: A

Round off the approximate number as indicated.

128) 6022 3 significant digits
A) 6022 B) 6020 C) 6000 D) 6030
Answer: B

129) 2659 2 significant digits
A) 2800 B) 2660 C) 2600 D) 2700
Answer: D

130) 13.69 3 significant digits
A) 13.8 B) 14 C) 13.6 D) 13.7
Answer: D

131) 21 2 significant digits

A) 21 B) 20.9 C) 21.0 D) 21.1

Answer: A

132) 0.9999 3 significant digits

A) 0.999 B) 1.00 C) 1 D) 1.0

Answer: B

133) 0.9999 2 significant digits

A) 1 B) 0.99 C) 1.00 D) 1.0

Answer: D

134) 0.09499 3 significant digits

A) 0.095 B) 0.0950 C) 0.09 D) 0.0949

Answer: B

135) 0.009499 2 significant digits

A) 0.00950 B) 0.009 C) 0.0094 D) 0.0095

Answer: D

136) 5802 3 significant digits

A) 4300 B) 5802 C) 5900 D) 5800

Answer: D

137) 2090 2 significant digits

A) 290 B) 2200 C) 2000 D) 2100

Answer: D

Perform the indicated operations on a calculator. Express the result with the proper accuracy and precision. Assume that all numbers are approximate.

138) 6.8 + 0.466 + 32.29

A) 39 B) 39.56 C) 39.6 D) 39.556

Answer: C

139) 7.12(13.26)

A) 94.41 B) 94.4112 C) 90 D) 94.4

Answer: D

140) 0.58 ÷ 442

A) 762 B) 0.001312 C) 0.00131 D) 0.0013

Answer: D

141) $\frac{0.0836}{2.241}$ - 0.0756

A) -0.038 B) 0.1129 C) -0.0383 D) 0.11

Answer: C

142) $\frac{0.7531 \times 0.74126}{2.132}$

A) 2.10 B) 2.098 C) 0.262 D) 0.2618

Answer: D

143) $\frac{0.15(-0.8335)}{75.26(6.90)}$

A) -0.0002400 B) -0.000240 C) -0.0002 D) -0.00024

Answer: D

144) $\frac{52.40}{0.9094(4803) - 8411}$

A) -0.01600 B) -0.0130 C) -0.01296 D) -0.0160

Answer: C

145) $\frac{46.866 \times 0.01470}{18.336 - 5.829}$

A) 0.05508 B) 0.006446 C) 0.055080 D) 0.0551

Answer: A

146) $\frac{2237}{550.0} - \frac{3.999 \times 347.7}{260.2}$

A) -1.277 B) -1.28 C) 21.7 D) 21.73

Answer: A

147) $\frac{3}{0.4497} + \frac{3.6051}{4.520 - 4.990}$

A) -1.000 B) -1 C) -1.0000 D) -1.00

Answer: B

Perform the indicated operation and express with the proper accuracy and precision. The first number given is approximate and the second number is exact. (Use calculator if needed).

148) 0.3073 + 19.7

A) 20.0 B) 20 C) 20.0073 D) 20.01

Answer: D

149) 19.025 - 36.8

A) -17.8 B) -17.775 C) 17.775 D) -18

Answer: B

150) 5.526(29)

A) 160.25 B) 160.3 C) 160 D) 160.254

Answer: B

151) 9.37 ÷ 6281

A) 0 B) 0.00149 C) 0.0014918 D) 0.0

Answer: B

152) $8 \div 364$

A) 21.978022 B) 0.02197802 C) 0.02 D) 0.022

Answer: C

Solve the problem. Assume all numbers are approximate unless otherwise stated or the number has been determined by a definition or counting process.

153) The current (in amperes, A) running through a resistor in an electric circuit can be calculated by dividing the voltage measured across the resistor (in volts) by the resistance of the resistor (in ohms). If the voltage measured across a resistor is 185 volts and the resistance is 210 ohms, how much current runs through the resistor?

A) 69,000 A B) 0.88 A C) 25 A D) 1.1 A

Answer: B

154) If you are told that the height of a trapezoid is 975 mm, that the length of one of its parallel sides is 4423 mm, and that the area of the trapezoid is 3,551,000 mm^2, then you could estimate the length of the other parallel side (in mm) by performing the calculation $\frac{2(3{,}551{,}000)}{975} - 4423$. Perform this calculation and report the length found.

A) 7380 mm B) 7280 mm C) 7000 mm D) 7282 mm

Answer: C

155) The expression $\frac{PE}{9.8 \cdot m}$ will tell you how high, in meters, you must raise the hammer of a pile driver when you know the mass (m) of the hammer in kg, and what potential energy (PE) in Joules is required. Find the height to which a 59-kg hammer must be raised to have 1780 J of potential energy.

A) 3.1 m B) 3 m C) 3.08 m D) 3.079 m

Answer: A

156) The capacitance of a certain element in an electric circuit (in μF) was determined by calculating the value of $\frac{15(16)}{15 + 16}$. Calculate this capacitance.

A) 7.3 μF B) 7.7 μF C) 8.0 μF D) 7.5 μF

Answer: B

157) An electronics manufacturer lists the frequency of one of its crystals as 5.95 MHz. What are the lowest and highest possible frequencies at which the crystal may oscillate?

A) 5.9 MHz and 6 MHz B) 5.945 MHz and 5.954 MHz
C) Only at 5.95 MHz D) 5.94 MHz and 5.96 MHz

Answer: B

158) At some point in the decimal equivalent of a rational number, some sequence of digits will start repeating endlessly. An irrational number never has an endlessly repeating sequence of digits. If the fraction $\frac{2}{15}$ is a rational number, which decimal equivalent digits indicate this?

A) The fraction is irrational. B) 3
C) 13 D) 15

Answer: B

159) A technician reports that on three successive test runs, a vehicle used 33.7 ml, 35.39 ml and 32.305 ml of fuel to travel a measured mile. What would be the total fuel used to travel 3 miles?

A) 101.40 ml B) 101.395 ml C) 101 ml D) 101.4 ml

Answer: D

160) A computer hard drive stores exactly 512 bytes of data in each disk sector, and there are exactly 8 sectors in a cluster. If a hard drive contains 1024 clusters, how many bytes of data can be stored?

A) 524,288 bytes B) 4,190,000 bytes C) 4,194,304 bytes D) 4,194,000 bytes

Answer: C

161) The formula for finding the volume of a square pyramid is $V = \frac{1}{3}s^2h$, where the s is the side of the base and h is the height. Determine the volume of a 47 cm high pyramid with sides of length 33.45 cm.

A) 20,000 cubic cm B) 25,000 cubic cm C) 18,000 cubic cm D) 17,530 cubic cm

Answer: C

Simplify the expression. Use positive exponents. Assume variables represent nonnegative numbers.

162) $(8a)(5a^2)$

A) $8a + 5a^2$ B) $13a^3$ C) $40a^4$ D) $40a^3$

Answer: D

163) $(-9y)(-2y^3)$

A) $-11y^3$ B) $18y^4$ C) $9y - 2y^3$ D) $-18y^4$

Answer: B

164) $(5x^5)(4x^2)$

A) $20x^7$ B) $9x^{10}$ C) $9x^7$ D) $20x^{10}$

Answer: A

165) $(-5x^5)(3x^4)$

A) $-15x^{20}$ B) $8x^{20}$ C) $-15x^9$ D) $8x^9$

Answer: C

166) $(-8x^5)(-4x^4)$

A) $-12x^{20}$ B) $-12x^9$ C) $-32x^{20}$ D) $32x^9$

Answer: D

167) $(2m^2z^4)(4m^2z^2)$

A) $8mz^4$ B) $8m^4z$ C) $8m^4z^6$ D) $8mz^6$

Answer: C

168) $\frac{15n^5}{5n}$

A) $3n^5$ B) 3 C) $3n$ D) $3n^4$

Answer: D

169) $\frac{-6x^8}{-2x^4}$

A) $3x$ B) 3 C) $3x^8$ D) $3x^4$

Answer: D

170) $\frac{35x^7y^8}{7x^5y^5}$

A) $5x^2y^3$ B) $5xy$ C) $5x^5y^7$ D) $5x^7y^8$

Answer: A

171) $\frac{-14x^8y^8}{-7x^6y^4}$

A) $2xy$ B) $2x^2y^4$ C) $2x^4y^8$ D) $2x^8y^8$

Answer: B

172) $(2^4a)^5$

A) $2^{20}a^5$ B) 2^4a^5 C) 2^9a^5 D) 2^9a

Answer: A

173) $(-4a^3)^2$

A) $4096a^3$ B) $-8a^3$ C) $16a^6$ D) $4096a^6$

Answer: C

174) $(-2x^2y)^4$

A) $16x^8y^4$ B) $-8x^2y^4$ C) $-8x^2y$ D) $16x^6y^4$

Answer: A

175) $(-3p^2q^2r^2)^4$

A) $81p^6q^6r^6$ B) $81p^8q^8r^8$ C) $(-3)^8p^8q^8r^8$ D) $-12p^6q^6r^6$

Answer: B

176) $\left(\frac{5}{x}\right)^4$

A) $\frac{625}{x^4}$ B) $\frac{625}{x}$ C) $625x^4$ D) $\frac{5}{x^4}$

Answer: A

177) $\left(\frac{4}{7y}\right)^3$

A) $\frac{64}{7y^3}$ B) $\frac{64}{343y}$ C) $\frac{64}{343y^3}$ D) $\frac{64y^3}{343}$

Answer: C

178) $\left(\frac{4a}{3}\right)^2$

A) $\frac{16a^2}{3}$ B) $\frac{16a^2}{9}$ C) $\frac{4a^2}{9}$ D) $\frac{16a}{9}$

Answer: B

179) $\left(\frac{a^2}{b^3}\right)^2$

A) $\frac{a^4}{b^3}$ B) $\frac{a^6}{b^4}$ C) $\frac{a^3}{b^6}$ D) $\frac{a^4}{b^6}$

Answer: D

180) $\left(\frac{x^8}{2}\right)^2$

A) $\frac{x^{16}}{2}$ B) $\frac{x^{16}}{4}$ C) $\frac{4}{x^{16}}$ D) $\frac{x^{10}}{4}$

Answer: B

Simplify.

181) 5^0

A) -1 B) 0 C) 1 D) 5

Answer: C

182) -4^0

A) 1 B) -4 C) -1 D) 0

Answer: C

183) $13^0 + 11^0$

A) 0 B) 2 C) 1 D) 24

Answer: B

184) $(3x)^0$

A) 3 B) 0 C) 3x D) 1

Answer: D

185) $(x^5)^{-3}$

A) $\frac{1}{x^{15}}$ B) x^{15} C) x^8 D) $\frac{1}{x^8}$

Answer: A

186) $(7^{-2} \times 2^{-4})^{-1}$

A) $\frac{1}{7^2 \times 2^4}$ B) $\frac{1}{7^6 \cdot 2^6}$ C) $7^6 \times 2^6$ D) $7^2 \times 2^4$

Answer: D

187) $(7^3 \times 3^5)^{-3}$

A) $\frac{1}{7^8 \times 3^8}$ B) $7^8 \times 3^8$ C) $\frac{1}{7^9 \times 3^{15}}$ D) $7^9 \times 3^{15}$

Answer: C

188) $(x^{-4}y^5)^{-3}$

A) $\frac{x^{12}}{y^{15}}$ B) $\frac{1}{x^{12}y^{15}}$ C) $\frac{y^2}{x^{-7}}$ D) $\frac{x^{-7}}{y^2}$

Answer: A

189) $\left(\frac{4x^5}{y^4}\right)^{-4}$

A) $\frac{y^{-16}}{0.00390625x^{-20}}$ B) $\frac{4x^{16}}{y^{-16}}$ C) $\frac{y^{16}}{4x^{20}}$ D) $\frac{y^{16}}{256x^{20}}$

Answer: D

190) $(x^{-6})^2$

A) x^{12} B) x^{-4} C) $\frac{1}{x^{-4}}$ D) $\frac{1}{x^{12}}$

Answer: D

191) $(n^7)^{-2}$

A) n^{14} B) n^5 C) $\frac{1}{n^5}$ D) $\frac{1}{n^{14}}$

Answer: D

192) $(a^{-3})^{-6}$

A) a^3 B) $\frac{1}{a^{18}}$ C) $\frac{1}{a^3}$ D) a^{18}

Answer: D

193) $(mn)^{-7}$

A) $\frac{1}{m^7n^7}$ B) $\frac{m}{n^7}$ C) $\frac{n}{m^7}$ D) m^7n^7

Answer: A

194) $(2xy)^{-5}$

A) $\frac{x^5y^5}{32}$ B) $32x^5y^5$ C) $\frac{32}{x^5y^5}$ D) $\frac{1}{32x^5y^5}$

Answer: D

195) $(2t^5)^{-2}$

A) $\frac{x^{10}}{4}$ B) $\frac{4}{t^{10}}$ C) $\frac{1}{4t^{10}}$ D) $4t^{10}$

Answer: C

196) $(x^{-1}y^{-3})^{-6}$

A) x^6y^{18} B) $\frac{x^6}{y^{18}}$ C) $\frac{1}{x^6y^{18}}$ D) $\frac{y^{18}}{x^6}$

Answer: A

197) $\left(\frac{x^3}{4}\right)^{-2}$

A) $16x^6$ B) $\frac{16}{x^6}$ C) $\frac{1}{16x^6}$ D) $\frac{x^6}{16}$

Answer: B

198) $\left(\frac{3}{y^5}\right)^3$

A) $\frac{27}{y^{15}}$ B) $\frac{1}{27y^{15}}$ C) $27y^{15}$ D) $\frac{y^{15}}{27}$

Answer: A

199) $\left(\frac{x^5y^2}{wz^3}\right)^{-4}$

A) $\frac{x^{20}y^8}{w^4z^{12}}$ B) $\frac{wz^{12}}{x^{20}y^8}$ C) $\frac{w^4z^{12}}{x^{20}y^8}$ D) $x^{20}y^8w^4z^{12}$

Answer: C

Evaluate the expression. All numbers are approximate. State your answer with the proper accuracy and precision.

200) $7 + (-4)^3 - (-4)^9$

A) 300,000 B) -262,201 C) 262,087 D) -262,073

Answer: A

201) $-0.339^2 - (-0.607)^6$

A) -0.16 B) 0.165 C) -0.165 D) -0.065

Answer: C

202) $\frac{316.4841 - (-4.475)^4}{1.065(-4.99)}$

A) 15.9 B) -135.01 C) -15.91 D) 15.908

Answer: A

203) $3.02(-60.5)^2 - 2500/1.16^3 + 0.728^5\left(27.9^3 - 7.02^4\right)$

A) 9424 B) 13,400 C) 13,397 D) 2.17

Answer: B

Solve the problem.

204) The formula for the volume of a wire is $\pi r^2 h$, where r is the radius of the wire and h is the length. Find the volume of a wire if r = 0.561 units and h = 130 units.

A) 130 units^3 B) 30,000 units^3 C) 129 units^3 D) 29,800 units^3

Answer: A

205) The volume of a sphere is $\frac{4}{3}\pi r^3$. Find the volume of a bearing if the diameter is 4.40 mm.

A) 44.6 mm^3 B) 45 mm^3 C) 780 mm^3 D) 140 mm^3

Answer: A

206) If \$3800 is invested at 4.1% interest, compounded quarterly, the amount in the account after 8 years is $3800\left(1 + 0.041 \div 4\right)^{32}$. Calculate the amount (the 1 is exact).

A) \$5300.00 B) \$1.39 C) \$0.08 D) \$5266.32

Answer: D

207) If the deflection (in cm) of a beam is calculated by the expression $\frac{x\left(1000 - 20x^2 + x^3\right)}{1850}$, where x is the distance (in m) from one end of the beam to the point where the force is applied, then what is the deflection if the force is applied in the center of a 9.24 m beam? (The 1000 and 20 are exact numbers.)

A) 1.677 cm B) -2.59 cm C) -3.04 cm D) 1.68 cm

Answer: D

Perform the indicated operations and attach the correct units to the answer.

208) $\left(39.8 \frac{\text{mi}}{\text{gal}}\right)(4.4 \text{ gal})$

A) 9.0 mi B) 9.0 gal C) 180 gal D) 180 mi

Answer: D

209) $\left(357 \frac{\text{kg}}{\text{m}^3}\right)\left(\frac{1000 \text{ g}}{1 \text{ kg}}\right)\left(\frac{1 \text{ m}}{100 \text{ cm}}\right)^3$

A) 35.7 kg/cm^2 B) 0.357 g/cm^3 C) 3570 g/cm^3 D) 3.57 kg/cm^3

Answer: B

Make the indicated conversion.

210) 396 cm^2 to in.^{2}

A) 61.4 in.^{2} B) 1010 in.^{2} C) 156 in.^{2} D) 2550 in.^{2}

Answer: A

211) 80.1 mi^2 to km^2

A) 30.9 km^2 B) 128 km^2 C) 50.1 km^2 D) 207 km^2

Answer: D

212) 46.9 $\frac{m}{s}$ to $\frac{ft}{h}$

A) 51,500 ft/h B) 154 ft/h C) 554,000 ft/h D) 9230 ft/h

Answer: C

Solve the problem.

213) A mobile device has a screen that measures 9.2 in. across its diagonal. Convert this to centimeters.

A) 23 cm B) 3.6 cm C) 36 cm D) 2.3 cm

Answer: A

214) A wastewater treatment plant processes 613,000 gal/day. Convert this to liters per hour.

A) 9670 L/h B) 96,700 L/h C) 162,000 L/h D) 6750 L/h

Answer: B

Express the number in standard notation.

215) 8.06×10^4

A) 80,600 B) 322.4 C) 806,000 D) 8060

Answer: A

216) 3.203×10^5

A) 32,030 B) 160.15 C) 320,300 D) 3,203,000

Answer: C

217) 1.4070×10^5

A) 1,407,000 B) 140,700 C) 70.35 D) 14,070

Answer: B

218) 1.11×10^{-4}

A) 0.000111 B) -111,000 C) 0.00111 D) 0.0000111

Answer: A

219) 1.455×10^{-5}

A) -145,500 B) 0.000001455 C) 0.00001455 D) 0.0001455

Answer: C

220) 5.396×10^{-6}

A) 0.000005396 B) -5,396,000 C) 0.0000005396 D) 0.00005396

Answer: A

221) 2.0433×10^{-7}

A) 0.000000020433 B) 0.00000020433 C) -204,330,000 D) 0.0000020433

Answer: B

Express the number in scientific notation.

222) 0.000399

A) 3.99×10^{-3} B) 3.99×10^{-5} C) 3.99×10^{-4} D) 3.99×10^4

Answer: C

223) 0.00005763

A) 5.763×10^{-4} B) 5.763×10^{4} C) 5.763×10^{-5} D) 5.763×10^{5}

Answer: C

224) 0.0000094714

A) 9.4714×10^{6} B) 9.4714×10^{-6} C) 9.4714×10^{-7} D) 9.4714×10^{-5}

Answer: B

225) 0.00000041103

A) 4.1103×10^{-6} B) 4.1103×10^{6} C) 4.1103×10^{7} D) 4.1103×10^{-7}

Answer: D

226) 0.0000000155011

A) 1.55011×10^{-9} B) 1.55011×10^{8} C) 1.55011×10^{-7} D) 1.55011×10^{-8}

Answer: D

227) 29,000,000,000

A) 2.9×10^{-9} B) 2.9×10^{9} C) 2.9×10^{-10} D) 2.9×10^{10}

Answer: D

228) 724,000,000,000,000,000

A) 7.24×10^{17} B) 724×10^{15} C) 7.24×10^{-17} D) 724×10^{-15}

Answer: A

229) 4,200,000,000,000

A) 4.2×10^{12} B) 4.2×10^{-9} C) 4.2×10^{-12} D) 4.2×10^{9}

Answer: A

230) 3,672,000,000

A) 367.2×10^{7} B) 3.672×10^{9} C) 3672×10^{6} D) 3.672×10^{6}

Answer: B

231) 892,784,000,000

A) 8.92784×10^{11} B) 892.784×10^{9} C) 8927.84×10^{8} D) 8.92784×10^{9}

Answer: A

Rewrite each number using scientific notation before performing the operation. Leave your answer in scientific notation form.

232) (500)(40,000)

A) 2.0×10^{8} B) 2.0×10^{6} C) 2.0×10^{9} D) 2.0×10^{7}

Answer: D

233) (30,000,000)(0.0005)

A) 1.5×10^{3} B) 1.5×10^{4} C) 1.5×10^{2} D) 0.0

Answer: B

234) $\frac{9000}{.0003}$

A) 3×10^6 B) 3×10^3 C) 3×10^7 D) 3×10^8

Answer: C

235) $3 \times 10^{-35} + 5 \times 10^{-34}$

A) 8.0×10^{-34} B) 5.3×10^{-35} C) 5.3×10^{-33} D) 5.3×10^{-34}

Answer: D

236) $\left(2 \times 10^{-16}\right)^{-5}$

A) 3.13×10^{-18} B) 2.00×10^{-21} C) 2.00×10^{11} D) 3.13×10^{78}

Answer: D

Use a calculator to perform the operation. Express your answer in scientific notation.

237) 0.0000725(0.00473)(2,450,000,000)

A) 8.40×10^2 B) 8.40 C) 8.40×10^{-14} D) 8.40×10^7

Answer: A

238) $\frac{0.00422}{3250(93,500)}$

A) 1.39×10^{-3} B) $1.388728918 \times 10^{-11}$

C) 1.39×10^{-1} D) 1.39×10^{-11}

Answer: D

239) $\frac{(3.62 \times 10^{-8})(4.76 \times 10^{26})}{6.013 \times 10^{-9}}$

A) 6.62×10^1 B) $2.865657742 \times 10^{27}$ C) 2.87×10^{27} D) 2.87×10^{25}

Answer: C

Use scientific notation to solve the problem.

240) The national debt of a small country is $7,420,000,000 and the population is 2,550,000. What is the amount of debt per person?

A) \$2.91 x 10^3 B) \$2.91 x 10^6 C) \$2.91 D) \$29.10

Answer: A

241) A company produced 925,000 small appliances in one year and made a profit of $8,620,000. What was the profit on each appliance?

A) \$1.07 B) \$9.32 C) \$9.32 x 10^2 D) \$1.07 x 10^{-1}

Answer: B

242) The earth is approximately 92,900,000 miles from the sun. If 1 mile = 1.61 x 10^3 m, what is the distance to the sun in meters?

A) 1.50 x 10^{11} m B) 5.7 x 10^{-10} m C) 1.50 x 10^{10} m D) 5.7 x 10^{10} m

Answer: A

243) The distance from the earth to the sun is 92,900,000 miles. How long would it take a rocket, traveling at 2.9×10^3 miles per hour, to reach the sun?

A) 3.2×10^3 hr B) 3.2×10^4 hr C) 3.2×10^2 hr D) 3.2 hr

Answer: B

244) If the speed of light is 3.00×10^8 m/sec, how long does it take light to travel 2.29×10^{11} m, the distance from the sun to Mars?

A) 7.6×10^2 min B) 7.6×10^3 sec C) 7.6×10^2 sec D) 76 sec

Answer: C

245) A light-year is the distance that light travels in one year. Find the number of miles in a light-year if light travels 1.86×10^5 miles per second.

A) 6.0×10^{14} miles B) 6.0×10^7 miles C) 6.0×10^{12} miles D) 6.0×10^5 miles

Answer: C

246) A computer can do one calculation in 1.4×10^{-7}seconds. How long would it take the computer to do a trillion (10^{12}) calculations?

A) 1.4×10^6 sec B) 1.4×10^{12} sec C) 1.4×10^{-7} sec D) 1.4×10^5 sec

Answer: D

247) Assume that the volume of the earth is 5×10^{14} cubic meters and the volume of a bacterium is 2.5×10^{-16} cubic meters. If the earth could be filled with bacteria, how many would it contain?

A) 5.0×10^{-31} bacteria B) 2.0×10^{30} bacteria

C) 2.0×10^{-30} bacteria D) 5.0×10^{31} bacteria

Answer: B

Determine the principal value without using a calculator.

248) $\sqrt{144}$

A) Not a real number B) 72 C) 13 D) 12

Answer: D

249) $\sqrt{\frac{25}{9}}$

A) 2 B) $\frac{5}{4}$ C) 3 D) $\frac{5}{3}$

Answer: D

250) $-\sqrt{25}$

A) -12 B) -5 C) 5 D) Not a real number

Answer: B

251) $-\sqrt{\frac{361}{441}}$

A) Not a real number B) $-\frac{180}{220}$ C) $\frac{19}{21}$ D) $-\frac{19}{21}$

Answer: D

252) $-\sqrt[3]{8}$

A) 4 B) 2 C) Not real number D) -2

Answer: D

253) $\sqrt[3]{27}$

A) 5 B) 3 C) 9 D) Not real number

Answer: B

254) $\sqrt[3]{-343}$

A) 18.52 B) -7 C) Not real number D) 9.26

Answer: B

255) $-\sqrt[4]{625}$

A) 8.368 B) 25 C) Not real number D) -5

Answer: D

256) $\left(\sqrt{8}\right)^2$

A) -8 or 8 B) -8 C) 8 D) Not real number

Answer: C

257) $\left(\sqrt[5]{44}\right)^5$

A) Not real number B) 44 or -44 C) 44 D) -44

Answer: C

Simplify.

258) $\sqrt{45}$

A) $9\sqrt{5}$ B) 6 C) $3\sqrt{5}$ D) 3

Answer: C

259) $-\sqrt{27}$

A) 5 B) $-3\sqrt{3}$ C) 3 D) $-9\sqrt{3}$

Answer: B

260) $\sqrt{32}$

A) 8 B) $4\sqrt{2}$ C) $2\sqrt{4}$ D) 5

Answer: B

261) $\sqrt{540}$

A) 90 B) 23 C) $6\sqrt{15}$ D) $15\sqrt{6}$

Answer: C

262) $-\sqrt{504}$

A) $-14\sqrt{6}$ B) $-6\sqrt{14}$ C) -22 D) -84

Answer: B

263) $5\sqrt{14}$

A) 70 B) 18 C) $5\sqrt{14}$ D) $14\sqrt{5}$

Answer: C

264) $\sqrt{1024 + 3600}$

A) Not a real number B) 68 C) 28 D) 92

Answer: B

265) $\sqrt{10^2 + 7^2}$

A) $\sqrt{149}$ B) $\sqrt{51}$ C) Not real number D) 17

Answer: A

266) $\frac{8^2\sqrt{16}}{2^2\sqrt{64}}$

A) 4 B) 8 C) 64 D) 128

Answer: B

267) $\sqrt{16^2 + 4^2}$

A) $4\sqrt{20}$ B) 12 C) 20 D) $4\sqrt{17}$

Answer: D

Find the value of each square root by use of a calculator. Each number is approximate.

268) $\sqrt{60.9}$

A) 24.7 B) 3710 C) 7.80 D) 7.8

Answer: C

269) $\sqrt{9363}$

A) 96.763 B) 97 C) 96.76 D) 96.8

Answer: C

270) $\sqrt{0.3237}$

A) 0.57 B) 0.570 C) 0.1048 D) 0.5700

Answer: D

271) $\sqrt{0.0465}$

A) 0.2160 B) 0.22 C) 0.682 D) 0.216

Answer: D

272) $\sqrt{15.1357 + 3.5721}$

A) 5.78050 B) 5.7805 C) 4.32525 D) 4.3253

Answer: D

273) $\sqrt{15.6492} + \sqrt{6.9189}$

A) 4.7506 B) 6.5863 C) 6.58630 D) 4.75060

Answer: B

274) $\sqrt{0.0743 - 0.0142}$

A) 0.245 B) 0.25 C) 0.153 D) 0.15

Answer: A

275) $\sqrt{0.0419} - \sqrt{0.0115}$

A) 0.098 B) 0.0975 C) 0.174 D) 0.17

Answer: B

276) $\sqrt{0.0745^2} - \sqrt{0.0116^2}$

A) 0.0861 B) 0.0754 C) 0.0736 D) 0.0629

Answer: D

277) $\sqrt{0.0552^2 - 0.0192^2}$

A) 0.0518 B) 0.0584 C) 0.0360 D) 0.05175

Answer: A

Use your calculator to solve the problem.

278) The length of a hypotenuse c of a right triangle with legs a and b of lengths a = 79mm and b = 42mm is given by $c = \sqrt{a^2 + b^2}$. Calculate the length of the hypotenuse. (Round to an appropriate number of significant digits.)

A) 67mm B) 89.47mm C) 121mm D) 89mm

Answer: D

279) When a ball with coefficient of restitution e is dropped from a height h meters onto a large flat surface, the time t from the first impact until the ball stops bouncing is given by $t = \frac{2}{1 - e}\sqrt{\frac{8h}{9.8}}$ seconds. Find the time it takes a ball with coefficient of restitution 0.28 to stop bouncing if it is dropped from a height of 79.3 centimeters. (Round to the nearest tenth.)

A) 2.2 seconds B) 2.1 seconds C) 20.7 seconds D) 22.4 seconds

Answer: A

280) The length (in feet) an industrial spring is stretched from its natural length with work, W foot-pounds, is given by $L = \sqrt{\frac{2W}{k}}$, where k is a constant for the given spring. If a certain spring has a constant of 67.6 and has 287 foot-pounds of work applied, how far will it stretch?

A) 2.91 feet B) 72.1 feet C) 2.06 feet D) 8.49 feet

Answer: A

281) The impedance (in ohms) of a series RLC circuit is given by the expression $\sqrt{R^2 + (X_L - X_C)^2}$, where R is the resistance of the resistor, X_L is the reactance of the coil, and X_C is the reactance of the capacitor. What is the impedance of a circuit containing a 340 ohm resistor, a coil with a reactance of 2422 ohms, and a capacitor with a reactance of 896 ohms? (All values are approximate.)

A) 2,400,000 ohms B) 6.0×10^{12} ohms C) 1600 ohms D) 830 ohms

Answer: C

282) At the end of a lease, a vehicle has a value V of $27,000. The original cost was $36,000. The annual rate of depreciation incurred by the leasing company can be expressed as $100\left(1 - \sqrt{V/C}\right)$. Find the annual rate (the 1 and 100 are exact).

A) -$15 B) $13 C) $86 D) $44

Answer: B

Collect like terms and write in descending order.

283) $-9m^7 + 5m^7$

A) $-28m$ B) $-4m^7$ C) $-4m^{14}$ D) Can't be simplified

Answer: B

284) $8y^9 + 5y^8$

A) $13y^8$ B) $13y^{17}$ C) Can't be simplified D) $13y^9$

Answer: C

285) $-4x^9y^{10} + 6x^9y^{10} - 5x^9y^{10} + 8x^9y^{10} + 8x^9y^{10}$

A) $21x^9y^{10}$ B) Can't be simplified C) $-3x^9y^{10}$ D) $13x^9y^{10}$

Answer: D

286) $4z^7 + 8z^8$

A) $12z^7$ B) $12z^{15}$ C) $12z^8$ D) $8z^8 + 4z^7$

Answer: D

287) $7x^7 + 3x^7 - 8x^7$

A) $-168x^7$ B) $2x^{21}$

C) $2x^7$ D) Can't be simplified

Answer: C

288) $4x^8 + 2x^2 + 6x^8$

A) Can't be simplified B) $12x^2$

C) $10x^8 + 2x^2$ D) $12x^{18}$

Answer: C

289) $-8m^2 + 4m^2 + 9m^2 + 2m^2$

A) $7m^2$ B) Can't be simplified C) $7m^8$ D) $14m$

Answer: A

290) $5a^6 - 3a^6 + 14a^5 + 10a^6 - 11a^5$

A) $15a^6$ B) $12a^6 + 3a^5$ C) $15a^{11}$ D) Can't be simplified

Answer: B

291) $-3m^9 + 12m^7 - 3m^2 + 12m^9 - 4m^7$

A) Can't be simplified B) $9m^9 + 8m^7 - 3m^2$ C) $72m$ D) $4m^{18}$

Answer: B

292) $3y^9 + 9y^8 - 6y^5 + 4$

A) Can't be simplified
B) $10y^{22}$
C) $3y^9 + 9y^8 - 6y^5$
D) $6y^{22} + 4$

Answer: A

Perform the indicated operation.

293) $(4a^5 - 3a^3) + (8a^5 + 9a^3)$

A) $12a^5 + 6a^3$
B) $18a^{16}$
C) $18a^8$
D) $12a^{10} + 6a^6$

Answer: A

294) $(-14a^3 + 6a^2) - (17a^3 - 20a^2)$

A) $-31a^3 + 26a^2$
B) $3a^3 - 14a^2$
C) $-31a^3 - 14a^2$
D) $-5a^5$

Answer: A

295) $(-8 + 4n^7 + 4n^5) + (5n^7 + 6n^5 - 6)$

A) $5n^{12}$
B) $-3n^7 + 10n^5 - 2$
C) $9n^7 + 10n^5 - 14$
D) $9 + 10n^7 - 14n^5$

Answer: C

296) $(5n^7 - 14n^5 - 10) - (-10n^5 + 7n^7 - 2)$

A) $-2n^7 - 4n^5 - 8$
B) $-14n^{12}$
C) $-2n^7 - 7n^5 - 12$
D) $-2n^7 - 4n^5 - 12$

Answer: A

297) $(4n^7 - 6n + 3n^5) + (9n^5 + 8n^7 + 7n)$

A) $12n^7 + 12n^5 + 1n$
B) $25n^{13}$
C) $2n^7 + 13n^5 + 10n$
D) $12n + 12n^7 + 1n^5$

Answer: A

298) $(-16n + 2n^7 + 9n^6) - (11n^6 + 4n^7 - 4n)$

A) $-16n^{14}$
B) $-2n^7 + 13n^6 - 20n$
C) $-2n^7 - 2n^6 - 20n$
D) $-2n^7 - 2n^6 - 12n$

Answer: D

299) $(-7 - 5x^6 + 5x^8 - 5x^7) + (-2x^7 - 8x^6 + 6 + 2x^8)$

A) $7x^8 - 7x^7 - 13x^6 - 1$
B) $-13x^{42} - 1$
C) $7x^{16} - 7x^{14} - 13x^{12} - 1$
D) $-9x^8 - 9x^7 + 11x^6 - 3$

Answer: A

300) $(6x^3 + 4x^5 - 5 + 2x^4) - (8 + 6x^4 + 6x^5 + 2x^3)$

A) $10x^5 + 8x^4 + 8x^3 + 3$
B) $-2x^5 + 8x^4 + 8x^3 + 3$
C) $10x^5 + 8x^4 + 8x^3 - 13$
D) $-2x^5 - 4x^4 + 4x^3 - 13$

Answer: D

301) $(5x^3 + 9x^5 - 3 - 3x^4) - (-2 - 5x^4 + 6x^5 + 9x^3)$

A) $3x^5 + 2x^4 - 4x^3 - 1$
B) $3x^5 - 8x^4 + 14x^3 - 5$
C) $15x^5 - 8x^4 + 14x^3 - 1$
D) $15x^5 - 8x^4 + 14x^3 - 5$

Answer: A

Simplify the expression.

302) x - [9x - (x - 4)]

A) -7x + 4 B) -9x - 4 C) -7x - 4 D) -4x + 4

Answer: C

303) y - [7y + (y - 4) + 6]

A) -5y - 2 B) 5y + 2 C) -7y - 2 D) -7y + 2

Answer: C

304) z - {3z + [5z - (8z - 3) + 6]}

A) z - 9 B) 12z - 3 C) -z - 9 D) z - 3

Answer: A

305) b - {8b - [b - (2b - 7) - 6]}

A) -8b + 13 B) -8b + 1 C) -4b + 13 D) -10b - 1

Answer: B

306) $[-(-4y^2 - 2y + 7y^3) - (10y^2 + 10y - 9y^3)] - y^2$

A) $2y^3 - 5y^2 - 8$ B) $-16y^3 + 13y^2 + 12$ C) $2y^3 - 7y^2 - 8y$ D) $16y^3 - 15y^2 - 12$

Answer: C

307) [-4m + (-10m - 6)] - [(10m + (1 - 6m)) + 4m]

A) -22m - 7 B) -14m + 7 C) -6m - 5 D) -14m - 5

Answer: A

Perform the indicated operation.

308) The shape of a curve in a machined part results in the expression 6R - (3R - r). Simplify the expression.

A) 6R B) 3R - r C) r - 3R D) 3R + r

Answer: D

309) Experiments on a new composite material yield

$\left[\left(K + \frac{6}{5}\alpha\right) + 2\left(K - \frac{3}{5}\alpha\right)\right] - \left[\left(K + \frac{6}{5}\alpha\right) - \left(K - \frac{3}{5}\alpha\right)\right]$.

Simplify the expression.

A) $K - \frac{9}{5}\alpha$ B) $3K - \frac{9}{5}\alpha$ C) $3K - \frac{3}{5}\alpha$ D) $K - \frac{3}{5}\alpha$

Answer: B

310) A warehouse has x cases containing 17 boxes of product and x + 13 cases containing 24 boxes of product. Write a simplified expression to represent the total number of boxes of product in the warehouse.

A) 54x boxes B) 13x + 408 boxes C) 41x + 13 boxes D) 41x + 312 boxes

Answer: D

Find the product.

311) 3(5x)

A) 15 B) 8x C) 8 D) 15x

Answer: D

312) $(3a)(7a^2)$

A) $3a + 7a^2$ B) $21a^4$ C) $10a^3$ D) $21a^3$

Answer: D

313) $(-7y)(-5y^8)$

A) $-35y^9$ B) $-12y^8$ C) $7y - 5y^8$ D) $35y^9$

Answer: D

314) $(3x^3)(5x^2)$

A) $15x^6$ B) $8x^5$ C) $8x^6$ D) $15x^5$

Answer: D

315) $(-4x^5)(7x^2)$

A) $-28x^7$ B) $11x^7$ C) $-28x^{10}$ D) $11x^{10}$

Answer: A

316) $(-6x^4)(-8x^2)$

A) $-14x^6$ B) $-48x^8$ C) $48x^6$ D) $-14x^8$

Answer: C

317) $(2m^3z^4)(3m^4z^2)$

A) $6m^7z$ B) $6mz^6$ C) $6m^7z^6$ D) $6mz^7$

Answer: C

318) $(-2m^4z^4)(5m^3z^2)$

A) $-10m^7z^6$ B) $-10m^6z^7$ C) $-10mz^7$ D) $-10mz^6$

Answer: A

319) $(-2x^2y^4)(-3x^2y^2)$

A) $6x^4y^6$ B) $6xy^6$ C) $6x^6y^4$ D) $6xy^4$

Answer: A

320) $8(7x - 1)$

A) $56x - 1$ B) $48x$ C) $56x - 8$ D) $7x - 8$

Answer: C

321) $-11x(12x + 3)$

A) $12x^2 - 33x$ B) $-165x^2$ C) $-132x^2 - 33x$ D) $-132x^2 + 3x$

Answer: C

322) $-3x^7(6x + 2)$

A) $-18x - 6$ B) $-18x^8 + 2$ C) $-24x^7$ D) $-18x^8 - 6x^7$

Answer: D

323) $9x^5(6x^7 - 5)$

A) $54x^7 - 45$ B) $54x^{12} - 5$ C) $54x^{12} - 45x^5$ D) $9x^5$

Answer: C

324) $10x^4(-8x^6 - 7x^3)$

A) $-150x^4$ B) $-80x^{10} - 7x^3$ C) $-150x^{10} - 150x^7$ D) $-80x^{10} - 70x^7$

Answer: D

325) $4ax^4(9ax^6 + 6x^2)$

A) $36a^2x^{10} + 6x^2$ B) $36ax + 24x$ C) $36a^2x^{10} + 24ax^6$ D) $36a^2x^{10} + 24x^6$

Answer: C

326) $-9ax^6(9ax^7 - 6x^3 - 10)$

A) $-81a^2x^{13} + 54ax^9$ B) $-81ax^7 + 54x^3 + 90$

C) $-81a^2x^{13} - 6x^3 - 10$ D) $-81a^2x^{13} + 54ax^9 + 90ax^6$

Answer: D

327) $-12ax^2(9ax^3 - 8x^2 + 4a)$

A) $-108a^2x^5 + 96ax^4$ B) $-108ax^3 + 96x^2 - 48a$

C) $-108a^2x^5 + 96ax^4 - 48a^2x^2$ D) $-108a^2x^5 - 8x^2 + 4a$

Answer: C

328) $7a^2x^7(8a^9x^5 - 2x^4 + 2a)$

A) $56a^9x^5 - 14x^4 + 14a$ B) $56a^{11}x^{12} - 2x^4 + 2a$

C) $56a^{11}x^{12} - 14a^2x^{11} + 14a^3x^7$ D) $56a^{11}x^{12} - 14a^3x^{11} + 2a$

Answer: C

Perform the indicated operations.

329) $(2x - 2y)(4x - y)$

A) $6x^2 - 10xy + 2y^2$ B) $8x^2 - 10xy + 2y$ C) $8x^2 - 10xy + 2y^2$ D) $6x^2 - 7xy + 2y^2$

Answer: C

330) $(2x - \frac{5}{2})(2x + \frac{1}{2})$

A) $4x^2 - 2x - \frac{5}{4}$ B) $4x^2 - 4x - \frac{5}{2}$ C) $4x^2 + 2x - \frac{5}{4}$ D) $4x^2 - 4x - \frac{5}{4}$

Answer: D

331) $5(4x + 4y)(4x - 7y)$

A) $80x^2 - 60xy - 4y$ B) $40x^2 - 285xy - 140y^2$

C) $80x^2 - 60xy - 140y^2$ D) $40x^2 - 60xy - 140y^2$

Answer: C

332) $-3ax^6(-11ax^6 + 8x^5 - 2a)$

A) $33a^2x^{12} - 24ax^{11} + 6a^2x^6$ B) $33ax^{12} - 24ax^{11} + 6ax^6$

C) $33a^2x^{36} - 24ax^{30} + 6a^2x^6$ D) $33a^2x^{12} + 24ax^{11} - 6a^2x^6$

Answer: A

333) $(2x + y - z)^2$

A) $4x^2 + y^2 + z^2 - 2xyz$ B) $4x^2 + y^2 + z^2 + 2xy - 2xz - 2yz$

C) $4x^2 + y^2 + z^2$ D) $4x^2 + y^2 + z^2 + 4xy - 4xz - 2yz$

Answer: D

334) $(2x - 7)(x - 11)$

A) $x^2 + 77x - 29$ B) $2x^2 - 30x + 77$ C) $x^2 - 29x - 30$ D) $2x^2 - 29x + 77$

Answer: D

335) $(-4 + x)(3x + 2)$

A) $3x^2 - 10x - 8$ B) $x^2 - 10x - 10$ C) $3x^2 - 8x - 10$ D) $3x^2 - 11x - 8$

Answer: A

336) $(x - 5)(-4x - 10)$

A) $-4x^2 + 10x + 10$ B) $-4x^2 + 8x + 50$ C) $-4x^2 + 10x + 50$ D) $-4x^2 + 50x + 10$

Answer: C

337) $(x - 11y)(x - 4y)$

A) $x^2 - 18xy + 44y^2$ B) $x^2 - 15xy - 15y^2$ C) $x^2 - 15xy + 44y^2$ D) $x - 15xy + 44y$

Answer: C

338) $(3x - 11y)(-4x + 3y + 1)$

A) $-12x^2 + 53xy + 53y^2$ B) $-12x^2 + 9xy + 3x - 33y^2$

C) $-12x^2 + 53xy + 3x - 33y^2 - 11y$ D) $-12x^2 + 44xy + 3x - 33y^2 - 11y$

Answer: C

339) $(n + 10)^2$

A) $100n^2 + 20n + 100$ B) $n^2 + 20n + 100$ C) $n + 100$ D) $n^2 + 100$

Answer: B

340) $(5 + p)^2$

A) $p^2 + 25$ B) $25p^2 + 10p + 25$ C) $p^2 + 10p + 25$ D) $p + 25$

Answer: C

341) $(7m + 4)^2$

A) $7m^2 + 16$ B) $49m^2 + 16$ C) $7m^2 + 56m + 16$ D) $49m^2 + 56m + 16$

Answer: D

342) $(5x + 12y)^2$

A) $25x^2 + 120xy + 144y^2$ B) $5x^2 + 144y^2$

C) $25x^2 + 144y^2$ D) $5x^2 + 120xy + 144y^2$

Answer: A

343) $(7x - 3y)^2$

A) $7x^2 - 42xy + 9y^2$ B) $7x^2 + 9y^2$ C) $49x^2 + 9y^2$ D) $49x^2 - 42xy + 9y^2$

Answer: D

344) $\left(x - 3y^2\right)^2$

A) $x^2 + 9y^4$ B) $x^2 + 6xy^2 + 9y^4$ C) $x^2 - 6xy^2 + 9y^4$ D) $x^2 - 6xy + 9y^2$

Answer: C

345) $4\left(4x - 5\right)^2$

A) $64x^2 + 100$ B) $256x^2 - 640x + 400$ C) $64x^2 - 160x + 100$ D) $64x^2 - 40x + 25$

Answer: C

Find the indicted product and simplify if possible.

346) The amount of material required to make a spherical shell is given by $\frac{4\pi}{3}(R - r)(R^2 + Rr + r^2)$.

A) $\frac{4\pi}{3}R^3 - r^3$ B) $\frac{4\pi}{3}R^3 + \frac{8\pi}{3}R^2r + \frac{8\pi}{3}Rr^2 + \frac{4\pi}{3}r^3$

C) $\frac{4\pi}{3}R^3 - \frac{8\pi}{3}R^2r + \frac{8\pi}{3}Rr^2 - \frac{4\pi}{3}r^3$ D) $\frac{4\pi}{3}R^3 - \frac{4\pi}{3}r^3$

Answer: D

347) The area of annulus (washer) is given by $\frac{\pi(D - d)(D + d)}{4}$.

A) $\frac{\pi D^2}{2} + \frac{\pi d^2}{2}$ B) $\frac{\pi D^2 - \pi d^2}{4}$

C) $\frac{\pi D^2 - d^2}{4}$ D) $\frac{\pi D^2 - 2\pi Dd - \pi d^2}{4}$

Answer: B

348) Measurements concerning the volume of liquid flowing through a valve result in the expression $(3F^3 - 4)(F^2 - F + 4)$.

A) $3F^5 - 3F^4 + 12F^3 - 4F^2 + 4F - 16$ B) $3F^5 + 9F^3 - 4F^2 + 4F - 16$

C) $3F^6 - 3F^4 + 12F^3 - 4F^2 + 4F - 16$ D) $3F^5 - 3F^4 + 12F^3 - 4F^2 - 4F - 16$

Answer: A

349) The expression $9x^2 - 18(x - 3)^2 - (x - 6)^3$ was used to determine the stress in a section of metal.

A) $-x^3 - 21x^2 + 180x - 378$ B) $-x^3 - 9x^2 + 378$

C) $-x^3 - 303x^2 + 36x + 207$ D) $-x^3 + 9x^2 + 54$

Answer: D

Divide. Write with positive exponents.

350) $\frac{-6x^7 + 18x^5}{-2x^3}$

A) $-6x^7 - 9x^2$ B) $3x^4 + 18x^5$ C) $-6x^9$ D) $3x^4 - 9x^2$

Answer: D

351) $\frac{6x^9 - 18x^6}{-3x^9}$

A) $-2 + 6x^3$ B) $-2 + \frac{6}{x^3}$ C) $-2 - 18x^6$ D) $6x^9 + \frac{6}{x^3}$

Answer: B

352) $\frac{-25x^6 - 10x^5 - 25x^4}{-5x^5}$

A) $10x + 2$ B) $5x + 2$ C) $5x + 2 + \frac{5}{x}$ D) $5x - 10x^5 + \frac{5}{x}$

Answer: C

353) $\frac{-14x^6 + 42x^5 - 49x^4}{-7x^5}$

A) $2x + 42x^5 + \frac{7}{x}$ B) $9x - 6$ C) $2x - 6 + \frac{7}{x}$ D) $2x - 6$

Answer: C

354) $\frac{-16x^7 + 6x^5 - 6x^3}{-2x^5}$

A) $8x - 3 + \frac{3}{x}$ B) $8x^2 - 3 + \frac{3}{x}$ C) $8x - 3 + \frac{3}{x^2}$ D) $8x^2 - 3 + \frac{3}{x^2}$

Answer: D

355) $\frac{10x^9 - 35x^8 - 40x^6 + 15x^4}{5x^6}$

A) $-2x^3 + 7x^2 + 8 - \frac{3}{x^2}$ B) $2x^3 - 4x^2 - 8$

C) $2x^3 - 7x^2 - 8 + \frac{3}{x^2}$ D) $2x^3 - 7x^2 - 8$

Answer: C

356) $\frac{6x^9 + 24x^8 - 15x^6 + 15x^4 + 8x^3}{3x^6}$

A) $2x^3 + 24x^8 - 15x^6 + 15x^4 + 8x^3$

B) $6x^9 + 8x^2 - 5 + \frac{5}{x^2} + \frac{8}{3x^3}$

C) $2x^3 + 8x^2 - 5$

D) $2x^3 + 8x^2 - 5 + \frac{5}{x^2} + \frac{8}{3x^3}$

Answer: D

357) $\frac{12x^{11} + 12x^{10} - 12x^8 + 8x^6 + 5x^5}{4x^8}$

A) $3x^3 + 3x^2 - 3 + \frac{2}{x^2} + \frac{5}{4x^3}$

B) $12x^{11} + 3x^2 - 3 + \frac{2}{x^2} + \frac{5}{4x^3}$

C) $3x^3 + 12x^{10} - 12x^8 + 8x^6 + 5x^5$

D) $3x^3 + 3x^2 - 3$

Answer: A

358) $\frac{64x^{11} - 24x^{10} + 24x^9 + 32x^7 + 7x^5}{8x^9}$

A) $8x^2 - 3x + 3 + \frac{4}{x^2} + \frac{7}{8x^4}$

B) $8x^3 - 3x^2 + 3$

C) $8x^3 - 24x^{10} + 24x^9 + 32x^7 + 7x^5$

D) $64x^{11} - 3x^2 + 3 + \frac{4}{x^2} + \frac{7}{8x^3}$

Answer: A

Perform the indicated operation.

359) $\frac{x^2 + 15x + 54}{x + 6}$

A) $x^2 + 9$ B) $x + 9$ C) $x - 48$ D) $x^3 - 48$

Answer: B

360) $\frac{x^2 + 4x - 45}{x + 9}$

A) $x + 5$ B) $x^2 - 5$ C) $x - 5$ D) $x^2 + 5x - 36$

Answer: C

361) $\frac{6m^2 + 26m - 20}{m + 5}$

A) $m - 4$ B) $6m - 4 + \frac{6}{m - 4}$ C) $6m + 4$ D) $6m - 4$

Answer: D

362) $\frac{y^2 + 6y + 9}{y + 3}$

A) $y - 3$ B) $y + \frac{3}{y + 3}$ C) $y + 3$ D) $y^2 + 3$

Answer: C

363) $\frac{p^2 + 2p - 19}{p + 6}$

A) $p + 4 + \frac{5}{p + 6}$ B) $p - 4 + \frac{5}{p + 6}$ C) $p - 5 + \frac{4}{p + 6}$ D) $p - 4$

Answer: B

364) $\frac{x^2 + 10x + 10}{x + 8}$

A) $x + 3$ B) $x + 2 - \frac{6}{x + 8}$ C) $\frac{x + 2}{x + 8}$ D) $x + 2 + \frac{6}{x + 8}$

Answer: B

365) $\frac{x^2 - 6x - 27}{x - 9}$

A) $x + 3$ B) $x^2 + 3$ C) $x + 3 + \frac{9}{x - 9}$ D) $x - 3$

Answer: A

366) $\frac{x^2 - 10x + 24}{x - 6}$

A) $x + 4$ B) $x - 4$ C) $x + 6$ D) $4 - x$

Answer: B

367) $\frac{-25x^3 - 25x^2 + 4x + 6}{-5x - 3}$

A) $5x^2 + 2x - 2$ B) $x^2 + 2x - 2$ C) $x^2 - 2x + 2$ D) $5x^2 - 2$

Answer: A

368) $\frac{4y^4 + 12y^3 + 6y - 1}{2y^2 + 1}$

A) $2y^2 - 6y + 1$ B) $2y^2 + 6y$ C) $2y^2 + 6y - 1$ D) $2y^2 - 1$

Answer: C

Perform the indicated division and find a simplified expression.

369) The average velocity of a certain particle in feet per second is given by $v = \frac{4t^3 - 4t^2 - 23t + 20}{2t - 5}$.

A) $2t^2 + 3t - 4$

B) $2t^2 + 3t - 5 + \frac{3}{2t - 5}$

C) $2t^2 - 3t - 4$

D) $2t^2 - 4t + 3 + \frac{-4}{2t - 5}$

Answer: A

370) If a submarine goes $2k^3 + 13k^2 + 10k - 25$ miles in $2k + 5$ hours, what is its rate of speed?

A) $k^2 - 4k + 5$ miles/hr

B) $k^3 + 4k^2 - 5k$ miles/hr

C) $k^2 + 9k - 5$ miles/hr

D) $k^2 + 4k - 5$ miles/hr

Answer: D

371) A patio has an area of $2m^3 + 13m^2 + 8m - 45$. Find the length if the width is $2m + 9$.

A) $m^2 - 2m + 5$ B) $m^2 + 2m - 5$ C) $m^3 + 2m^2 - 5m$ D) $m^2 + 11m - 5$

Answer: B

372) The volume of a box is $2p^4 + 17p^3 + 35p^2$. The height is p and the width is $p + 5$. What is the length?

A) $2p + 7$ B) $2p^2 + 7p$ C) $2p^3 + 7p^2$ D) $p^2 + 7$

Answer: B

Solve the equation.

373) $a - 2 = 10$

A) 8 B) -8 C) 12 D) -12

Answer: C

374) $6 = b - 8$

A) 14 B) -2 C) -14 D) 2

Answer: A

375) $2a = -14$

A) -16 B) 1 C) 16 D) -7

Answer: D

376) $-6x = -36$

A) -30 B) 2 C) 30 D) 6

Answer: D

377) $\frac{x}{-5} = -9$

A) -15 B) 1 C) -14 D) 45

Answer: D

378) $\frac{n}{2} = 7$

A) 8 B) 14 C) 3 D) 9

Answer: B

379) $6r + 6 = 30$

A) 4 B) 1 C) 22 D) 18

Answer: A

380) $2n - 7 = 1$

A) 10 B) 6 C) 7 D) 4

Answer: D

381) $5z + 18 = 4z + 2$

A) 20 B) -20 C) -16 D) 16

Answer: C

382) $10y = 6y + 9 + 3y$

A) 90 B) -90 C) 9 D) -9

Answer: C

383) $5(2z - 5) = 9(z + 3)$

A) -2 B) 2 C) 52 D) 7

Answer: C

384) $4x + 6(-2x - 6) = -35 - 9x$

A) - 1 B) $\frac{71}{17}$ C) - 71 D) 1

Answer: D

385) $41(x - 164) = 82$

A) 82 B) 164 C) 162 D) 166

Answer: D

386) $9x - (4x - 1) = 2$

A) $-\frac{1}{13}$ B) $\frac{1}{13}$ C) $\frac{1}{5}$ D) $-\frac{1}{5}$

Answer: C

387) $5(6x - 1) = 20$

A) $\frac{5}{6}$ B) $\frac{1}{2}$ C) $\frac{19}{30}$ D) $\frac{7}{10}$

Answer: A

388) $3(x + 5) - (3x + 15) = 0$

A) No solution B) All real numbers C) 5 D) 0

Answer: B

389) $(y - 6) - (y + 2) = 7y$

A) $-\frac{5}{7}$ B) $-\frac{4}{3}$ C) - 2 D) $-\frac{8}{7}$

Answer: D

390) $\frac{1}{3}(6x - 12) = \frac{1}{4}(16x - 8)$

A) 1 B) $\frac{1}{8}$ C) -1 D) -8

Answer: C

391) $(y - 5) - (y + 4) = 8y$

A) $-\frac{9}{8}$ B) $-\frac{3}{2}$ C) $-\frac{1}{8}$ D) $-\frac{1}{6}$

Answer: A

392) $\frac{1}{5}(10x - 20) = \frac{1}{2}(8x - 4)$

A) $\frac{1}{6}$ B) -1 C) -6 D) 1

Answer: B

393) $2 - |x| = 6$

A) $x = -8$ B) $x = \pm 4$

C) $x = -4$ D) The equation is a contradiction.

Answer: D

394) $8.8 - .02(x - 0.6) = .7x$ (All numbers are approximate.)

A) $x \approx 1$ B) $x \approx 10$

C) $x \approx 1.25527066$ D) The equation is a contradiction.

Answer: B

395) $\frac{143}{371} = \frac{11M}{17}$ (All numbers are approximate.)

A) $M \approx 2.5$ B) $M \approx 0.60$ C) M = 10.6622807 D) M = 0.96929825

Answer: B

396) $7(x - 4) + 1 = 7x - 6$

A) $x = 21$ B) $x = 1.5$

C) $x = 3.0$ D) The equation is a contradiction.

Answer: D

Solve. Give your answer as a mixed number if appropriate.

397) $\frac{x}{54} = \frac{7}{18}$

A) $2\frac{1}{3}$ B) $138\frac{6}{7}$ C) 28 D) 21

Answer: D

398) $\frac{3}{5} = \frac{21}{n}$

A) 105 B) 35 C) $12\frac{3}{5}$ D) $\frac{3}{105}$

Answer: B

399) $\frac{34}{102} = \frac{13}{x}$

A) 1292 B) 39 C) $\frac{1}{39}$ D) $4\frac{1}{3}$

Answer: B

400) $\frac{36}{6} = \frac{18}{n}$

A) 18 B) 6 C) 2 D) 3

Answer: D

Solve the problem.

401) A merchant has coffee worth $30 a pound that she wishes to mix with 20 pounds of coffee worth $60 a pound to get a mixture that can be sold for $50 a pound. How many pounds of the $30 coffee should be used?

A) 30 pounds B) 10 pounds C) 5 pounds D) 15 pounds

Answer: B

402) A paint mixture contains 48 gallons of base for every gallon of color. In 1323 gallons of paint, how many gallons of color are there?

A) 441 gallons B) 661 gallons C) 27 gallons D) 1296 gallons

Answer: C

403) A reservation clerk worked 12.15 hours one day. She spent twice as much time entering new reservations as she did verifying old ones and one and a half as much time calling to confirm reservations as verifying old ones. How much time did she spend entering new reservations?

A) 4.05 hours B) 10.8 hours C) 5.4 hours D) 2.7 hours

Answer: C

404) One half of a number is 3 more than one-sixth the same number. What is the number?

A) 8 B) 18 C) 12 D) 9

Answer: D

405) The sum of twice a number and 15 less than the number is the same as the difference between -23 and the number. What is the number?

A) -4 B) -2 C) -3 D) -1

Answer: B

406) On a map of the Thunderbird Country Club golf course, 1.5 inches equals 60 yards. How long is the 13th hole if the map shows 10 inches?

A) 600 yd B) 900 yd C) 9.0 yd D) 400 yd

Answer: D

407) The ratio of the lengths of strings that play the notes D and B is 27 to 16. If a string 32 cm long plays a B, what is the length of the string that plays a D?

A) 54 cm B) 32 cm C) 48 cm D) 59 cm

Answer: A

Solve the equation for the indicated variable.

408) $ax + b = 0$ for x

A) $-b - a$ B) $-ab$ C) $\frac{b}{a}$ D) $-\frac{b}{a}$

Answer: D

409) $\frac{a}{x} = b$ for x

A) ab B) $\frac{a}{b}$ C) b + a D) $\frac{b}{a}$

Answer: B

410) $\frac{x - b}{a} = 5$ for x

A) a + b + 5 B) b - a + 5 C) 5a + b D) 5a + ab

Answer: C

411) $5r + 1 = 9s$ for r

A) $9s - \frac{1}{5}$ B) $\frac{9}{5}s - 1$ C) $\frac{9}{5}s + 1$ D) $\frac{9s - 1}{5}$

Answer: D

412) $4r + 1 = 4s$ for r

A) $s - \frac{1}{4}$ B) s - 1 C) $\frac{s + 1}{4}$ D) $\frac{s - 1}{4}$

Answer: A

413) $ay - 7 = 8ay - b$ for y

A) $\frac{b - 7}{9a}$ B) $\frac{b + 7}{8a}$ C) $\frac{8 - 7 + ay}{8a}$ D) $\frac{b - 7}{7a}$

Answer: D

414) $q - 8x = 7q + 5$ for q

A) 2.16666667 B) $\frac{-8x - 5}{6}$ C) $\frac{6q + 5}{-8}$ D) $\frac{-8x - 5}{7}$

Answer: B

415) $\frac{1}{4}n - (7 - a) = 4a$ for n

A) 0.75a + 1.75 B) 20a - 28 C) 20a + 28 D) 12a + 28

Answer: D

416) $2 - (n - 0.2x) = 3n$ for x

A) $10n - 2$ B) $\frac{-10 - x}{-20}$ C) $10 - 20n$ D) $20n - 10$

Answer: D

417) $5 - (n + \frac{1}{10}x) = 5n$ for n

A) $\frac{50 - x}{60}$ B) $\frac{50 - x}{40}$ C) $-40n + 50$ D) $\frac{5 - x}{60}$

Answer: A

Solve the formula for the specified variable.

418) $A = \frac{1}{2}bh$ for b

A) $b = \frac{2A}{h}$ B) $b = \frac{A}{2h}$ C) $b = \frac{h}{2A}$ D) $b = \frac{Ah}{2}$

Answer: A

419) $V = \frac{1}{3}Bh$ for h

A) $h = \frac{3V}{B}$ B) $h = \frac{V}{3B}$ C) $h = \frac{3B}{V}$ D) $h = \frac{B}{3V}$

Answer: A

420) $P = s_1 + s_2 + s_3$ for s_3

A) $s_3 = s_1 + s_2 - P$ B) $s_3 = P + s_1 + s_2$ C) $s_3 = P - s_1 - s_2$ D) $s_3 = s_1 + P - s_2$

Answer: C

421) $F = \frac{9}{5}C + 32$ for C

A) $C = \frac{5}{F - 32}$ B) $C = \frac{9}{5}(F - 32)$ C) $C = \frac{5}{9}(F - 32)$ D) $C = \frac{F - 32}{9}$

Answer: C

422) $a + b = s + r$ for r

A) $r = a + b - s$ B) $r = s(a + b)$ C) $r = \frac{a + b}{s}$ D) $r = \frac{a}{s} + b$

Answer: A

423) $S = 2\pi rh + 2\pi r^2$ for h

A) $h = S - r$ B) $h = 2\pi(S - r)$ C) $h = \frac{S - 2\pi r^2}{2\pi r}$ D) $h = \frac{S}{2\pi r} - 1$

Answer: C

424) $I = \frac{nE}{nr + R}$ for n

A) $n = \frac{-R}{Ir - E}$ B) $n = \frac{IR}{Ir + E}$ C) $n = IR(Ir - E)$ D) $n = \frac{IR}{E - Ir}$

Answer: D

425) $A = \frac{1}{2}h(b_1 + b_2)$ for b_1

A) $b_1 = \frac{2A - (h)(b_2)}{h}$ B) $b_1 = \frac{(b_2)2A - h}{h}$ C) $b_1 = \frac{A - h(b_2)}{2h}$ D) $b_1 = \frac{h(b_2) - 2A}{h}$

Answer: A

426) $A = P(1 + nr)$ for r

A) $r = \frac{A}{n}$ B) $r = \frac{Pn}{A - P}$ C) $r = \frac{P - A}{Pn}$ D) $r = \frac{A - P}{Pn}$

Answer: D

Solve the formula for the indicated variable. Then use the supplied values to solve the equation.

427) The relationship between the distance p from an object to a lens, the distance q from the image to the lens, and the focal length f (the distance from the lens to the principal focus) is given by $\frac{1}{p} + \frac{1}{q} = \frac{1}{f}$. Solve for f. What is the focal length when p is 726 mm and q is 24.2 mm? (All values are approximate.)

A) $f = pq - p - q = 16{,}800$ mm B) $f = p + q = 750$ mm

C) $f = \frac{p}{p + q} + \frac{q}{p + q} = 1.00$ mm D) $f = \frac{pq}{p + q} = 23.4$ mm

Answer: D

428) The energy W stored by a capacitor is given by $W = \frac{1}{2}QV$, where V is the voltage across the capacitor's terminals after Q coulombs of electricity have been transferred from one of the capacitor's plates to the other. Solve for Q. How many coulombs have been transferred if W is 0.47 watts and V is 15.8 volts? (All values are approximate.)

A) $Q = \frac{WV}{2} = 3.7$ coulombs B) $Q = 2WV = 15$ coulombs

C) $Q = W^2V = 3.5$ coulombs D) $Q = \frac{2W}{V} = 0.059$ coulombs

Answer: D

429) The total surface area of a rectangular solid of length L, width W, and height H is given by $A = 2LW + 2LH + 2WH$. Solve for H. What is the height if the area A is 2768 cm^2, the length is 35.5 cm, and the width is 12.9 cm? (All measurements are approximate.)

A) $H = A - 2LW - 2L - 2W = 1760$ cm B) $H = \frac{A - LW}{L + W} = 47.7$ cm

C) $H = \frac{A - LW}{2} = 1160$ cm D) $H = \frac{A - 2LW}{2L + 2W} = 19.1$ cm

Answer: D

Solve the problem.

430) A tree 14 feet high grows at the rate of 2 feet each year. How many years will it take for the tree to grow to a height of 30 feet?

A) 8 years B) 29 year(s) C) 13 years D) 14 years

Answer: A

431) Pennies are packaged 50 in a roll. A mother gave her son 107 pennies for his bank and she had 43 pennies left over. How many rolls of pennies did she use?

A) 6 rolls B) 5 rolls C) 4 rolls D) 3 rolls

Answer: D

432) Elaine had 41 buttons and her grandmother donated 5 cards of buttons to the collection. Elaine sorted the buttons into 9 piles, putting 9 buttons in each pile. How many buttons were on each card from Elaine's grandmother?

A) 8 buttons B) 73 buttons C) 76 buttons D) 39 buttons

Answer: A

433) Junior high classes of 25 students each met in the cafeteria to take achievement tests. If exactly 8 students sat at each table and 25 tables were used, how many classes took the tests?

A) 8 classes B) 10 classes C) 11 classes D) 21 classes

Answer: A

434) A convention manager finds that she has $1500, made up of twenties and fifties. She has a total of 48 bills. How many fifty-dollar bills does the manager have?

A) 30 fifty-dollar bills B) 12 fifty-dollar bills C) 48 fifty-dollar bills D) 18 fifty-dollar bills

Answer: D

435) A woman has $1.70 in dimes and nickels. She has 2 more dimes than nickels. How many nickels does she have?

A) 10 nickels B) 14 nickels C) 12 nickels D) 8 nickels

Answer: A

436) A bank teller has some five-dollar bills and some twenty-dollar bills. The teller has 10 more of the twenties. The total value of the money is $800. Find the number of five-dollar bills that the teller has.

A) 34 five-dollar bills B) 24 five-dollar bills C) 44 five-dollar bills D) 14 five-dollar bills

Answer: B

437) A cashier has a total of 140 bills, made up of fives and tens. The total value of the money is $910. How many ten-dollar bills does the cashier have?

A) 63 ten-dollar bills B) 42 ten-dollar bills C) 98 ten-dollar bills D) 21 ten-dollar bills

Answer: B

Solve the problem. Assume all data are accurate to two significant digits unless greater accuracy is given.

438) Two pieces of equipment were purchased for a total of $2000. If one piece cost $810 more than the other, find the price of the less expensive piece of equipment.

A) $1400 B) $595 C) $600 D) $1405

Answer: B

439) A company sold 9.5 million items in a two-year period. Sales increased by 700,000 the second year. How many were sold the second year?

A) 5,000,000 B) 5,100,000 C) 7,650,000 D) 4,400,000

Answer: B

440) Two cities are 81.4km apart. Vehicle A leaves one city at the same time vehicle B leaves the other. Find the speed of vehicle A if it travels 6.5 km/h faster than vehicle B and if they pass in 14.7 minutes.

A) 166.3 km/h B) 6.0 km/h C) 162.9 km/h D) 169.4 km/h

Answer: D